A Conversational Food Delivery Application using Artificial Intelligence-based Voice Assistant

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Abstract: In the modern world, the speech recognition market has been growing very significantly as they involve the use of Artificial Intelligence. The major increase was due to the Covid-19 that had impacted the world a lot. The demand for smart appliances and devices has increased as most of the population is working from home and this has created an opportunity for the market, as this technology is being used in various smart devices. The demand for smart homes and appliances is increasing owing to various factors including growing internet penetration, advancements in technology, and increasing awareness about automation. So, here advanced technologies like Neural Networks and Deep Learning have paved the way for speech and voice recognition technology. Neural Networks facilitate accurate speech and voice recognition for higher capacity. They also compute the huge voice data generated by users to understand the context. So, following the modern evolution, we thought of combining the Food industry with Speech Recognition Market, in terms of technology we can say a combination of Web Technology and Artificial Intelligence.

Keywords: Food Delivery Application, Artificial Intelligence, Voice Assistant, Speech-to-text

I.   INTRODUCTION:

A. Overview of the issue you are examining

Technology has come a long way over the last 20 years or so. For example, the internet has opened up so many doors for people of all ages, making it easier for everyone to shop, work, and learn.

With the advanced technology, we are able to order anything we like to our home doors within a specified period of time whether it's a household item or a food item. Our issue is related to modern food ordering applications. If we talk about the expected behavior a person follows to order a food item we will see a huge amount of time is wasted while selecting his favorite food item as being a human beings we always look for the best, authentic item to be ordered which is also new and suits our tastes, but this thing becomes problematic in long term as in the case of huge traffic on an application and each customer spending so much time to select his favorite food item, application experience downtime, hence leading to poor customer experience and less engagement on that food delivery application which if we see a disadvantage for both customer and the foodservice providers.

B. Overview of what your paper will cover and how this will be accomplished

Our paper will be covering the solution to the issue discussed above, which broadly speaks about the existing food applications and general customer behavior with them. The paper will focus on modern voice-enabled software that interacts with humans to carry out general tasks. The following is accomplished by integrating an AI Voice Assistant in a food ordering application to target smooth interaction between an AI Voice Assistant and a customer.

C. Thesis statement

The paper will focus on the future of food delivery applications

which will have an integrated voice recognition system and will be

Solving the above-discussed issue by resolving the customer engagement and traffic dealing problems hence benefitting both

The customer and food service providers with more profit as an added advantage.

II. THE ISSUE

A. History behind the issue

Talking about the time when the Internet got its first boom and people preferred to interact with social sites or applications manually, this continued for a long but as the time progressed further and the 21st century started to take more advancements, it was discovered that interaction with social sites or applications with the help of input devices is really a non-efficient way. That's where major companies took the initiative to come up with Artificial Intelligence based Voice Assistants to help people perform their chores more efficiently. There were a lot of Voice Assistants developed by various firms over the course of the 21st century. Following is the timeline that needs to be ponder upon :

One essential thing to notice is that these voice assistants were developed individually and targeted to ease out daily chores or offer help in searching in search engines.

But they were never integrated with applications or websites or web apps to improve interactivity.

B. Challenge posed by the issue

The challenge posed by the issue is centered around efficiency,

how fast one can order food from a food delivery application.

In the case of traditional behavior where everything used to   be manual and it took a long for a user to choose a food item

On the basis of various considerations and then proceed

towards the order. This challenge completely tasks into

consideration another challenge i.e the traffic the application

can be experienced.

C. How the issue impacts society, in general,

The issue has highly impacted the society in general, in the context of ordering food from a food application , people of

various ages have different choices . Some prefer to reorder

Their previous orders and some struggle every time to try something new. If a user is searching for something new to try

which has some good reviews, ratings from people who already had an order and that too from a good place he needs to struggle and scroll through the application and ends up having a lot of options to choose from thus leading to disappointment. Now, this problem applies to those people as well who are quite aged and have less experience in ordering food or making selective choices.

D. Possible solutions to resolve the issue that occurred to you before conducting your research

Before the research was conducted, we planned on integrating some famous voice assistants like Alexa, Google Now, etc. to a food delivery application but when it comes to deploying that applications to production, the voice assistant along with the traffic on that particular food application will cost the foodservice providers a huge amount of capital, but after a lot of quality research we preferred Alan AI software to resolve the issue, as it offers the same services and the added cost is also very low.

III. LITERATURE REVIEW

The mention of the literature references which we took from journals, articles, and research papers belonging to respected authors who have specialized in the fields of our topic to improve our research paper are as follows:

S.No	Author's Name	Year	Objective	Research Methodology	Result/ Conclusion
1.	Dhiraj Pratap Singh, Deepika Sherawat, Sonia	7, June 2020	To develop Voice activated desktop assistant using python	It revolves around minimising the use of a mouse, keyboard, etc. and bringing into light a voice-activated desktop assistant	A system was developed to keep listening for commands and the time for listening is variable which can be changed according to user requirements
2.	H. Shruthi Nandini C.P. Sunandha S. Subasri	22, Mach 2016	Automation in Food Ordering System and Bill Payment in Hotels using TFT Display	It revolves around automated food ordering to reduce errors in food orders and reduce time consumption to completely order the food while focussing on minimizing the wrong orders	A system was developed which manages the menu, ordering system paybill, the system was developed using hardware such as Arduino Uno, Relay, etc.

3.	TVISHA TECHNO LOGIES	23, Dec 2020	3 Voice Technology for Online Food Ordering and Restaurants	It focuses on various technologies which can aid people in ordering food online using voice assistants Eg: Google Voice , Amazon Alexa, Siri, etc.	This advancement in technology will result in improving customer engagement and improving brand experience continuously.
4.	Ashutosh Sakharkar, Shidesh Tondwalkar, Pratik Thombare, Prof. Rajashri Sonawane	4, April 2021	Python Based AI Assistant for Computer	It focuses on AI Assistant for Computer which takes the user input in form of voice or text and processes it and returns the output in various forms like action to be performed or the search result is dictated to the end-user.	A voice assistant has developedvarious automated services using a single line command. It eases most of the tasks of the user
5.	Aaditya Chaprana, Ranjeet Kumar, Ph.D., Ajay Saini, Akash Kumar	2, May 2021	Voice Controlled News Web Application with Speech Recognition using Alan Studio	This paper has research related to Alan Voice Assistant which is helping in automating the daily news focusing on modern lifestyles where people have less time to acknowledge every latest news.	The news web application is integrated with Alan Studio which provides a hands-free approach to the user using the application.
6.	Vishal Kumar Dhanraj, Lokesh Kriplani,Se mal Mahajan	16, Feb2022	Research Paper on Desktop Voice Assistant	The paper displays research on Voice Assistants that understand natural language and commands given by the user to complete tasks given by the user	A voice assistant is developed which is less time consuming and understands commands and complete task assigned by the client. It uses NLP to match user voice or text input with executable commands

7.	Saliha Benkerzaz YoussefElmir, Abdeslam Dennai	2, July 2019	A Study on Automatic Speech Recognition	The research revolved around the development of a key branch in human communication with the machine where the sound has helped to facilitate the use of the machine with the user and to make a natural communication between them.	Automatic speech recognition is developed that allow the machine to understand the user's speech and convert it into a series of words through a computer program, thus creating a kind of natural communication between man and machine.
8.	Sameer Mahajan, Nahush Kulkarni	9, Sep 2020	A Conversational News Application Project using Artificial Intelligence based Voice Assistance	The research paper covered the research on other AI-based Voice Assistants apart from the famous ones like Alexa, Siri, etc., with the help of which developers can integrate it in their applications to ease out communication between humans and the AI.	A news application with the integration of Alan Voice Assistant was created which with the help of AI voice assistant converts the daily news to the user.
9.	Rustam Shadiev1, Wu-Yuin Hwang2, Nian-Shing Chen3 and Yueh-Min Huang1	November 2014	Review of Speech-to-Text Recognition Technology for Enhancing Learning	The paper discusses approaches to how Speech-to-Text Recognition (STR) technology has been applied to enhance learning. The first aim of this review is to understand how STR technology has been used to support learning over the past fifteen years, and the second is to analyze all research evidence to	STR-generated texts enable students to understand the learning content of a lecture better, confirm missed or misheard parts of a speech, take notes or complete homework, and prepare for exams

				understand how Speech-to-Text Recognition technology can enhance learning.	
10.	Ayushi Trivedi, Navya Pant, Pinal Shah, Similar Sonik, and Supriya Agrawal	17 March 2018	Speech to text and text to speech recognition systems-A Review	The paper discusses passing on information, to the right person, and in the right manner is very important, not just on a corporate level, but also on a personal level. The world is moving towards digitization, and so are the means of communication. Phone calls, emails, text messages, etc. have become an integral part of message conveyance in this tech-savvy world	It discussed tech that falls under STT and TTS, and have also read about their applications and usage. After having looked upon closely, at the different types of speech, speech recognition, speech to text conversion, text to speech conversion, and speech translation systems, we can draw a conclusion as such: In STT, under the 2 studied we can say that HMM works as a better speech signal to text converter despite its drawbacks because of their computational feasibility.

IV.   RECOMMENDATIONS

A. What can be learned from your research?

1. Recommendations

From our research paper we can learn integration of web applications with voice assistants. Our food application covers all the generations from a young age to old age.

With the use of voice assistants in food ordering apps, we make the customer experience smooth and steady.

2. To whom or what are the recommendations relevant, and why?

Our food application covers all the generations from teens to old age in their respective ways. As the young generation is more into technology and they want everything fast so this application will help in fast ordering of food with the help of voice assistants just like they talk with Alexa or google assistant to do their work.

Also, those who are no so much handy with modern

Technology can also communicate through this

application and make their food ordering experience

easy without any dependency.

V.   CONCLUSION

A. Recap the importance of your topic(so new information!)

Our topic is based on the integration of a Web-based application and voice recognition software. The voice recognition software we used is called ALAN Software . We have integrated both by taking a use case of a food delivery application. With the help of that voice recognition software, the customer and the foodservice providers both will experience an increase in efficiency at their ends. For the customer where doing an order manually wood takes 15 - 20 minutes approx, it can be minimized to less than 5 minutes and for the foodservice providers, they get to entertain more customers on their application, as due to least order time of each customer, the traffic on the application will become more manageable and hence will result in more number of orders, subsequently more profit.

B. Revisit your thesis statement (did you find support or no support ?)

For the mentioned thesis statement we found no support on the   Internet except for some information on Artificial

Intelligence-based Voice Assistants, but there was no mention

of their Integrations with any of the applications or websites.

C. Conclusions based upon information derived from the literature

In many research papers, we have seen amalgamations of voice assistance with various technologies written like Python, NLP, etc. To make life easier, advancements are being made in technology, and voice control is one of the leading technologies which are gradually being implemented on more and more devices. Voice control has become one of the most in-demand skills.
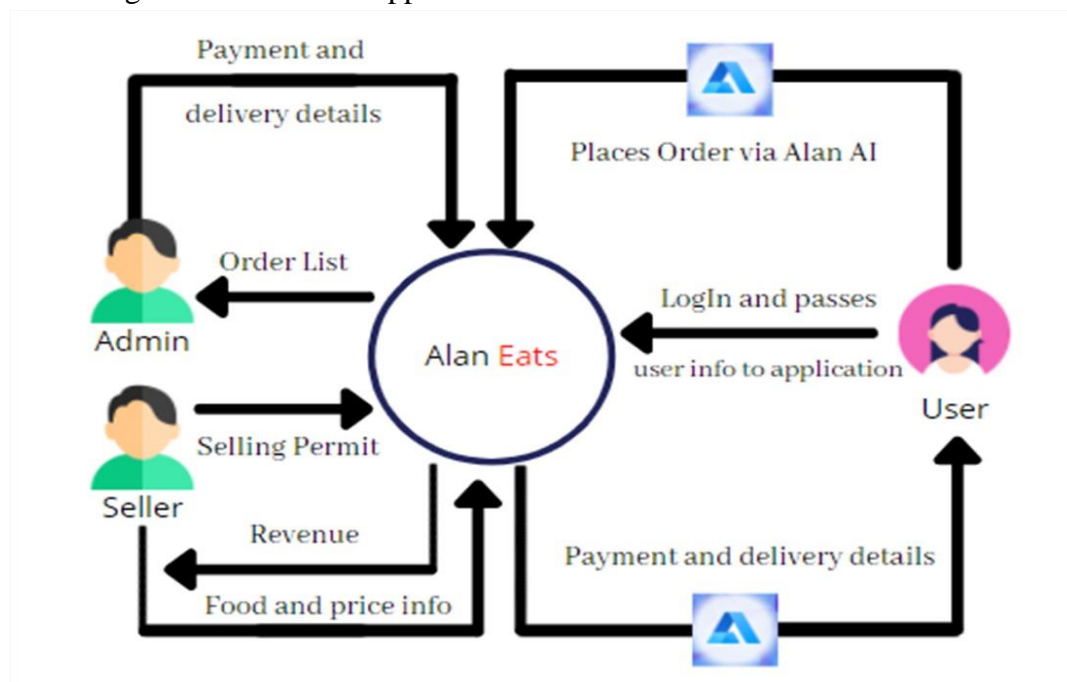
VI.   ASSESSMENT OF RESEARCH PAPER WRITING PROCESS

A. How the procedures (i.e steps followed) worked

Firstly the user needs to sign up/sign in using the valid credentials. After the successful signing, the user without any manual interaction can directly start conversing with the Alan Voice Assistant, the user can scroll through the application to view available food items, and ask Alan to view each of them with their associated ingredients, reviews, ratings, etc., on approval of which can ask Alan to add it to the cart. Furthermore, in the cart, while dealing with the user of the final order can add or remove

The items with the specific quantities. Next, after confirming the address to Alan, it will help the user to proceed with the payment process thus also providing the functionality to track the current status of the food order. After all the above steps Alan simply helps the user to complete the order.

Following is the flow of the application in the form of DFD :

B. What you learned

Through our research, we developed the project through which we got the opportunity to learn a lot of new concepts and also gained knowledge on various new tech tools.

The most important thing was we learned how to integrate

tools of Two major domains: Web Development and Artificial

Intelligence, due to which we got the opportunity to read a lot research articles, new inventions in these two domains,

and Trending ways of developing stuff in these domains and

Much more.

C. How this assignment may impact your career goals

As already discussed through this assignment we got to know about Alan Software (the AI-based Voice Assistant) and how to integrate it into a food delivery-based web application.

Now, this new innovation has helped us discover the future of web applications which will solely be focussing on making human interactions easier with an Artificial Intelligence software. Since we have developed this assignment from scratch we can proudly showcase our product in our profiles

So that if possible we can get support from the developer community as well as capital to scale our product to be able to benefit the masses of people (customers) as well as food delivery service providers.